

WaveCore Silver Batts

Total R Values

The following table shows Total R values for the **insulation path only** for a new house construction, calculated by independent consulting engineer James Fricker in accordance with AS/NZS 4859.1/Amdt 1 2006.

	Winter	Summer
Total R-value	R1.56	R4.52

(Pitched Tile Roof, ventilated attic, 50mm WaveCore Silver Batts above 90mm air gap, plasterboard ceiling)

Equivalent R values

Although Bulk Insulation is tested for Material R Value, its in-situ performance is determined by 'Total R value', the same measure as for Reflective Insulation.

AS/NZS 4859.1/Amdt 1 2006 introduced adjustment for thermal bridging enabling fair comparison of systems having insulation that covers framework with systems having insulation installed only between frames. Thus Amdt 1 provides a calculation procedure for overall Total R-value.

An extension of this is the concept of "Equivalent R-Value" developed to allow a fair comparison between insulation systems. It also accounts for the impact of the heat bridges formed by ceiling joists that separate conventional insulation batts.

As defined by the author (James Fricker) Equivalent R-value is **"the material R-value required by bulk insulation laid between joists to obtain a specified Overall Total R-value"**, thus it is a system measure, not the property of an insulation alone.

The following table shows results for one system using WaveCore Silver Batts.

(a) Pitched tiled roof, ventilated attic , 50mm WaveCore Silver Batts above softwood joists, plasterboard

	Winter	Summer
Overall Total R-value	R1.58	R4.33
Equivalent R-value	R1.45	R5.85

(b) Pitched tiled roof, ventilated attic , 50mm WaveCore Silver Batts above hardwood joists, plasterboard

	Winter	Summer
Overall Total R-value	R1.55	R4.07
Equivalent R-value	R1.70	R15.0

Thus fibrous batts installed between hardwood joists would need to be R1.70 to provide the same insulation in winter as 50mm WaveCore Silver Batts installed above joists. To get the same effect as 50mm WaveCore Silver Batts in summer, it would need R15.0 fibrous batts between hardwood joists because of the severe effect of thermal bridging in this system.

NOTES:

Calculated 7/3/08 14:00

- 1) The above "Equivalent R-values" apply to the specific pitched tiled roof system only. They do not apply to other roofs, or to walls or floors; or to roofs having sarking, or roofs which have bulk insulation installed on top of frames. (Each "Equivalent R-value" case is unique.)
- 2) R-values calculated assume that the top and bottom layers of the Silver Batts are held 50mm apart by the corrugated WaveCore. (Resistance will derate with poor installation.)
- 3) **It is a condition of this report that "Equivalent R-values" shall never be quoted or published without full inclusion of the above notes which state necessary assumptions. "Equivalent R-values" shall not be quoted out of context as this would lead to misinterpretation.**

Signed:


